

Before the  
**FEDERAL COMMUNICATIONS COMMISSION**  
Washington, DC 20554

In the Matter of )  
 )  
Petition to Adopt Service Rules for ) Docket No. RM-11798  
Unmanned Aircraft Systems ("UAS") )  
Command and Control in the )  
5030-5091 Band )

**AEROSPACE INDUSTRIES ASSOCIATION PETITION FOR RULEMAKING –  
COMMENTS OF SMALL UAV COALITION**

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The Small UAV Coalition (“Coalition”)<sup>1</sup> provides the following comments on the petition for rulemaking filed by the Aerospace Industries Association (“AIA”). AIA seeks the following actions:

- Allocation of the 5030-5091 MHz band for UAS Control and Non-Payload Communications (“CNPC”);
- Restriction of this band to safety of life communications (i.e., no payload communications);
- Establishment of an FCC licensing system for UAS operators;
- Establishment of Frequency Assignment Management System to require each flight to be authorized to use this spectrum by a Frequent Assignment Manager; and
- Regulation of UAS CNPC equipment under Part 87 of the Commission’s rules.

For the reasons stated below, the Coalition recommends that the Commission deny the AIA petition for rulemaking without prejudice because it is premature.

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<sup>1</sup> Member of the Small UAV Coalition are Amazon Prime Air, Google X Project Wing, Intel, Kespry, PrecisionHawk, Verizon, AirMap, AGI, Flirtey, Fresh Air Educators, and, T-Mobile.

- The allocation of this band requires further study. The narrowness of the band may make it impractical for UAS operations in uncontrolled and low altitude airspace, and data from recently granted experimental licenses (all but one of which use other bands) should be reviewed first before selecting a spectrum band, especially if, as it appears, the band is to be the exclusive or primary spectrum for non-payload safety-of-life communications.
- The case for a highly particularized frequency assignment management system has not been made given the potential for adverse unintended effects and the lack of analysis and evidence that it is preferable to other alternatives.
- The petition itself lacks clarity on several issues that should be resolved before a proposed rulemaking is opened.
- The petitioner's arguments for expedition are not persuasive and indeed make the case for more analysis and due diligence.

**I. WHETHER THE 5030-5091 MHZ BAND SHOULD BE ALLOCATED AS  
REQUESTED BY PETITIONER DESERVES FURTHER STUDY**

The Coalition does not take issue with the focus on the 5030-5091 MHz band, as allocation of this band was suggested by the 2012 World Radiocommunications Conference (WRC-12) and adopted by the Commission in 2017. In the Commission rulemaking proceeding, as cited by AIA, the Small UAV Coalition urged the Commission to adopt flexible rules for UAS. The Commission

responded: “Technical rules will be addressed in the service rules for this band, which will be promulgated in a separate proceeding.”<sup>2</sup>

The question remains whether this band is indeed suitable as the best spectrum band for UAS command and control communications. The petition acknowledges the narrowness of the recommended spectrum allocation makes it impractical to allow payload communications. This narrowness may also make it impractical for use by UAS operations in airspace generally below 500 feet Above Ground Level (AGL), which are expected to grow exponentially in the next few years.

The petition notes that the Commission has granted nearly two dozen experimental licenses in the past two years, but the 5030-5091 MHz band has been used under only one license. There are over 20 other spectrum bands allocated to UAS operators in these experimental licenses, yet the petition does not address the relative merits of any of these bands vis-à-vis the 5030-5091 MHz band. It would seem prudent to review the data from the use of these experimental licenses before ultimately agreeing upon a primary or exclusive spectrum band for non-payload safety-of-life communications.

There is also a question as to whether this band is appropriate for command and control links for operations beyond the visual line of sight of the pilot. Although the Commission’s UAS Allocation Order last year appeared to limit use of this band to UAS operations within the line-of-sight of the pilot,<sup>3</sup> the AIA petition does not address this issue. The Coalition believes that the

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<sup>2</sup> AIA Petition at 3-4.

<sup>3</sup> UAS Allocation Order, at ¶41 (emphasis in original) (“Our WRC-12 NRPM proposal, which was based on the U.S. Proposals for WRC-12, noted that the 5030-5091 MHz band would be appropriate to satisfy the terrestrial, line-of-sight, spectrum requirements for command and control of UAS in non-segregated airspace”).

utility of this spectrum would be reduced significantly if it would be used only for line-of-sight operations.

## **II. THE NEED FOR A FREQUENT ASSIGNMENT MANAGEMENT SYSTEM HAS NOT BEEN SHOWN**

The petition recommends the Commission establish a Frequency Assignment Management System because the 5030-5091 MHz band is narrow and will not be able to accommodate the expected growth in UAS operations, even if limited, as proposed, to CNPC (i.e., no payload communications). Thus, the petition urges the Commission to create a dynamic frequency assignment system for UAS operators that would require each UAS operator to seek authorization for each flight from a Frequency Assignment Manager, who would provide authority for only that short period of time required for the command and control non-payload communication. The RTCA SC-228 Minimum Operations Performance Standards (MOPS) for Command and Control (C2) document suggest that authority would be granted on a first-come, first-served basis with a narrow window of time to make the request (no more than 20 minutes from the time of flight). The UAS operator would either receive authority to operate on that frequency, or if not available, would be assigned a backup frequency channel.<sup>4</sup>

The creation of a Frequency Assignment Management Program appears to be a heavy, complex regulatory response that could result in unintended adverse consequences. With any assignment system involving opportunities that result in mutually exclusive use, there will be winners and

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<sup>4</sup> AIA Petition at 13. The petition does not state what backup frequency or frequencies would be available and whether they would remain in the 5030-5091 MHz band.

losers, and those who will seek to exploit or game the system. This would also introduce a mechanism that will be susceptible to single point failure point and is unlikely to be scalable. Before establishing such an assignment management system, the petitioner should show how such a system has worked in similar situations, including any precedent involving the allocation of spectrum. Moreover, such a system should not be created unless shown to be necessary. While the 5030-5091 MHz band may not be sufficient for the expected magnitude of CNPC, that limitation does not dictate the establishment of a frequency assignment system. One simple and obvious alternative would be the use of other spectrum for CNPC. While those CNPC UAS operations would need to be coordinated across the different operators and spectrum licensees, that is the exact work already being done around the establishment of an unmanned traffic management (UTM) system, which will be necessary regardless of the manner in which CNPC UAS operations are conducted. Given that coordination of CNPC UAS operations could simply be a UTM component, setting up a second UAS coordination system, that in and of itself would need to be coordinated with UTM, adds only unnecessary complication to UAS operations.

### **III. THE PETITION LACKS CLARITY**

The petition for rulemaking is not clear in several important respects. The petition does not state whether the Commission actions it seeks would apply to all UAS operations, regardless of airspace or altitude. There is nothing in the petition that differentiates controlled airspace from uncontrolled airspace, or distinguishes UAS operations based on altitude. Further, the petition makes no mention of the Commission's UAS Allocation Order, which appears to limit the band to

line-of-sight operations. This is important because the C2 MOPS, on which the petition heavily relies, are focused on operations in controlled airspace.<sup>5</sup>

The petition also seeks to limit the use of the 5030-5091 MHz band to so-called “safety-of-life” command and non-payload communications (CNPC). However, the petition is not clear on whether this band is to be used only for safety-of-life communications but is not the exclusive band for such communications, or whether this band is intended to be the exclusive spectrum for CNPC.<sup>6</sup> The Commission should not move forward when there is a lack of clarity around such a fundamental, threshold question for several reasons, not among the least of which is that such ambiguity deprives interested stakeholders the ability to comment meaningfully on the petition.

The petition assumes that all UAS operations will be conducted by a Pilot in Command (PIC), and assumes that the PIC will be an individual person. The petition does not address autonomous operations, likely to be widely available in the near future, nor does it address how the PIC operator license concept will apply to highly automated UAS operations.

The petition is also unclear as to the nature of the “FCC license” UAS operators would be required to obtain. AIA requests that the Commission require UAS PICs to secure an operator license under the FCC’s Commercial Radio Operator Program.<sup>7</sup> This broad request, which would appear to apply to all UAS operators, regardless of the type of operation or spectrum band used, is at odds with the rest of the petition, which is limited to the 5030-5901 MHz band and UAS CNPC

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<sup>5</sup> Explaining that among the authorized CNPC of a PIC would be a request for approval from air traffic controllers “prior to moving UAS into controlled airspace,” the petition at 11 suggests that the 5030-5091 MHz band would apply to all airspace. But there is no direct statement as to the airspace or altitude of UAS operations to be covered by this band.

<sup>6</sup> The petition at page 7 n. 20 states that “Additional spectrum allocations are however under consideration for CNPC links and AIA encourages FAA and other USG stakeholders to coordinate on making those resources available at expeditiously as possible.” What the petition does not state, however, is whether the 5030-5091 MHz band would be the exclusive band until the FCC formally allocates one or more other bands for CNPC links.

<sup>7</sup> AIA Petition at 9-10.

operations. Whether such a broad departure from the otherwise narrow scope of the petition was intentional merits confirmation or clarification. Further, AIA acknowledges that FAA has a primary role in determining the qualifications of remote pilots. If it is indeed the intent of the petition to seek a broad requirement that all UAS operators be FCC-licensed, such a request would exceed the scope of the FCC's authority. Additionally, such a regime would be unnecessarily restrictive; just as the FCC places spectrum management in the hands of cellular operators and not every person who owns a cell phone, it is not necessary for all UAS operators to be FCC-licensed, since the actual spectrum licensees will manage the spectrum used by the UAS operators.

At the present time, an FCC spectrum license grants exclusive, primary or protected use of certain spectrum. Under the petition's proposal, a frequency manager would assign the licensed operator a slice of spectrum of very limited duration, but the licensed operators will not manage or control use of that spectrum. Perhaps the petition is asking the Commission to adopt a different licensing concept, but that is not clear.

Without clarification of these issues, a notice of proposed rulemaking would lack focus and be less efficient.

#### **IV. THE PETITION IS PREMATURE**

While both industry and government authorities are taking steps to advance UAS operations, those efforts do not require, nor would they be helped, by establishing a set of restrictive rules around UAS spectrum, as the petition seeks. The petition asserts that "the moment is ripe for expeditious Commission action with respect to the adoption of licensing procedures and service



rules for UAS CNPC links in the 5030-5091 MHz band.”<sup>8</sup> However, AIA’s discussion of the current state of UAS operations does not support that statement. In fact, the petition demonstrates that UAS integration into the NAS is still very nascent. Therefore, the Commission can best serve those efforts by maintaining a flexible, light-touch approach to UAS spectrum.

First, AIA references the UAS Integrated Pilot Program (“UAS IPP”). But that pilot program is intended to provide data for the FAA’s consideration in development of further UAS rulemaking initiatives. The Department of Transportation announced its initial ten participant selections only a couple of weeks ago and operations under the UAS IPP have not yet begun. Unless extended, the UAS IPP will last until October 2020. The UAS IPP thus presents no pressing need to establish specific spectrum rules for UAS CNPC.

Second, AIA cites the rapid growth of UAS operations. While the Coalition agrees that UAS operations have increased significantly in recent years, UAS operations remain constrained by regulatory prohibitions and limitations. Operations beyond visual line of sight, over people, carrying packages, as well as autonomous operations, remain limited, even where waiver authority exists. Questions regarding spectrum, therefore, are not what is slowing down UAS integration and thus there is no need to rush to establish a UAS spectrum regulatory regime, particularly one that will set operational barriers that may unnecessarily constrain industry growth and innovation.

Third, AIA points to the “recent completion of RTCA’s MOPS for UAS.” But as noted above, these MOPS do not address low altitude operations by small UAS.

The Coalition agrees with the petition’s recommendation that the Commission’s “technical rules for CNPC links be flexible to support ongoing UAS development.”<sup>9</sup> But this necessary

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<sup>8</sup> AIA Petition at 7.

<sup>9</sup> AIA Petition at 16.

flexibility is not provided in the petition's other recommendations, where a pause to allow this UAS development to mature further is appropriate.

In sum, the Coalition respectfully requests the Commission deny the petition for rulemaking at this time, without prejudice to resubmitting a revised petition at a suitable time.<sup>10</sup>

Respectfully submitted,

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May 26, 2016

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<sup>10</sup> "Petitions which are . . . premature . . . may be denied or dismissed without prejudice to the petitioner." 47 C.F.R. 1.401(e).